

Docket No.: 22133-00006-US

Application No. 10/663,835
Amendment dated
Reply to Office Action of June 21, 2005

AMENDMENTS TO THE CLAIMS

1. (withdrawn and currently amended) A process for the production of a gas diffusion electrode, suitable for use in electrolysis of an aqueous solution of hydrogen chloride, comprising:
 - a) spraying a dispersion comprising a noble metal catalyst and a proton-conducting ionomer in an organic solvent onto an electrically conductive support, said support optionally being provided with a coating comprising an acetylene black/polytetrafluoroethylene mixture, said support comprising woven fabric, braid, net and/or nonwoven material comprising carbon, metal and/or sintered metal, and
 - b) removing the organic solvent.
2. (Withdrawn and currently amended) A diffusion electrode according to claim 13, process according to Claim 1, wherein said catalyst comprises a compound of the formula $MeI_xMeII_{(6-x)}E_8$, wherein MeI is molybdenum, MeII is ruthenium, platinum, rhenium, rhodium or palladium, E is sulphur, selenium or chlorine and x is from 0 to 6.
3. (Withdrawn and currently amended) A diffusion electrode according to claim 13, process according to Claim 1, wherein said catalyst comprises a platinum-ruthenium alloy.
4. (Withdrawn and currently amended) A diffusion electrode according to claim 13, said process according to Claim 1, further comprising
 - a) spraying a second dispersion comprising proton-conducting ionomer in an organic solvent and
 - b) removing said organic solvent.

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5. (Withdrawn and currently amended) A diffusion electrode according to claim 13, ~~process according to Claim 1~~, wherein as a result of said spraying of the dispersion according to a) and removing the solvent according to b), the electrically conductive support is loaded from 0.5 g/m² to 10 g/m², based on the noble metal of the catalyst.
6. (Withdrawn and currently amended) A diffusion electrode according to claim 13, ~~process according to Claim 1~~, wherein said electrically conductive support has a high specific surface area.
7. (Withdrawn and currently amended) A diffusion electrode according to claim 13, ~~process according to Claim 1~~, wherein said support comprises carbon black.
8. (Withdrawn and currently amended) A diffusion electrode ~~process~~ according to Claim 6, wherein the ratio of the mass of the catalyst to the mass of the proton-conducting ionomer is from 1:1 to 15:1.
9. (Withdrawn and currently amended) A diffusion electrode ~~process~~ according to claim 8, wherein said ratio is 3:1 to 6:1.
10. (Canceled)
11. (Withdrawn and currently amended) A diffusion electrode according to claim 13, ~~process according to Claim 1~~, wherein said dispersion and/or said second dispersion comprises a dispersion of Nafion[®] in alcohol.
12. (Withdrawn and currently amended) A diffusion electrode according to claim 13, ~~process according to Claim 1~~, wherein the dispersion according to steps a) and b) is sprayed on at least two times, and/or the second dispersion according to step c) and d) is sprayed on at least two times.
13. (Currently amended) A gas diffusion electrode obtained by a process comprising:

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- a) spraying a dispersion comprising a noble metal catalyst and a proton-conducting ionomer in an organic solvent onto an electrically conductive support said support being provided with a coating comprising an acetylene black/polytetrafluoroethylene mixture, said support comprising woven fabric, braid, net and/or nonwoven material comprising carbon, metal and/or sintered metal, and
- b) removing the organic solvent.

~~according to Claim 1.~~

14. (Withdrawn) A process for the production of a gas diffusion electrode, suitable for use in electrolysis of an aqueous solution of hydrogen chloride, comprising:

- a) spraying a dispersion comprising a noble metal catalyst and a proton-conducting ionomer in an organic solvent to form a gas diffusion electrode, and
- b) removing the organic solvent.

15. (Currently amended) A gas diffusion electrode suitable for use in electrolysis of an aqueous solution of hydrogen chloride, said electrode prepared according to a process comprising

- a) spraying a dispersion comprising a noble metal catalyst and a proton-conducting ionomer in an organic solvent on a support comprising woven fabric, braid, net and/or nonwoven material comprising carbon, metal and/or sintered metal to form a gas diffusion electrode, and
- b) removing the organic solvent.

~~of claim 14.~~

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16. (Withdrawn and currently amended) A gas diffusion electrode of claim 15, process according to claim 14 wherein said spraying and removing are conducted at least two times each.
17. (Withdrawn and currently amended) A gas diffusion electrode of claim 15, process according to claim 14 wherein after removing said organic solvent, a second dispersion that is the same or different than said dispersion is sprayed onto said support.
18. (canceled)
19. (currently amended) A gas diffusion electrode that has been prepared by spraying and drying catalyst on a support, said support comprising woven fabric, braid, net and/or nonwoven material comprising carbon, metal and/or sintered metal, and
and wherein sintering is not employed in the preparation thereof.
20. (Original) A gas diffusion electrode according to claim 19, wherein said electrode is loaded with from 0.5 to 10g/m² of said catalyst.
21. (Original) A gas diffusion electrode according to claim 19, wherein said catalyst is a noble metal catalyst.